The MAC Flyer

JULY 1973

MILITARY AIRLIFT COMMAND
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LT GEN JAY T. ROBBINS Vice Commander
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For Greater Efficiency
in MAC Air Operations

The MAC Flyer

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COVER: People — our most important resource require understanding and special handling.

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Discipline: The Soul of Aviation

General Paul K. Carlton
Commander

Over 200 years ago, General Washington made this statement in a letter to the captains of the Virginia regiments: "Discipline is the soul of an army. It makes small numbers formidable; procures success to the weak, and esteem to all."

Discipline is also the soul of aviation, and it is just as essential today as it was in the fledgling days of our republic.

I have found the general level of discipline in MAC encouraging, but I am occasionally disappointed to learn that a willful breach of discipline has destroyed property or jeopardized human life. Recently, the men appointed to investigate our aircraft accidents and incidents have turned up problems which reflect the ever-present human failings of carelessness, ineptness, and willful disregard. Though the cause factors were given various official titles, they can be summed by one label: poor self-discipline.

Good discipline begins with you: **you** must have the personal discipline to follow technical data and conform to proven standards to get your job done well. You must also expect good discipline from those around you. Consider this: if you do not display strong self-discipline on the ground — both on and off duty — how can you have the necessary discipline to do so in the air? Discipline is a full-time characteristic, not something to be turned on and turned off depending on the situation.

Self-discipline is a very personal attribute, but much of the encouragement and enforcement of standards has to come from the next man up the line. Therefore, let me state bluntly what I expect from my commanders, managers, and supervisors: you must command, and you must supervise. You must set the example, and you must demand optimum discipline from those you lead.

Strong leadership and competent supervision are the key points in any efficient endeavor. Unfortunately, accident records establish beyond any doubt that these attributes are too often lacking. The investigators and the inspectors continue to find lax supervision, sporadic leadership, and command weakened by complacency.

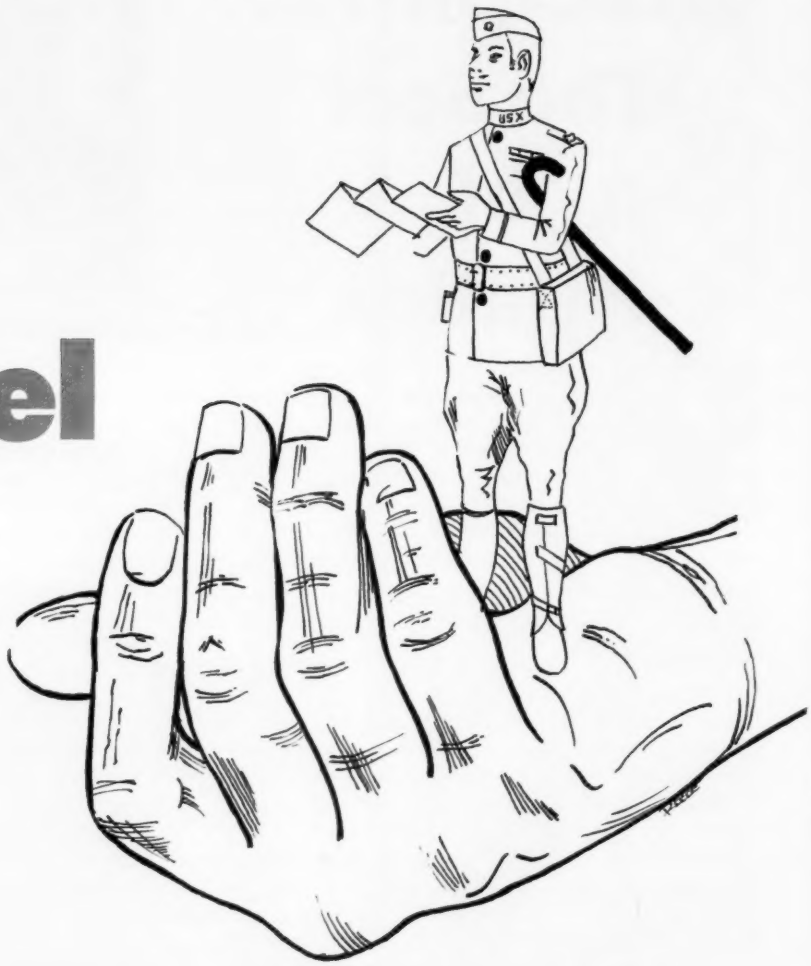
Being a good commander, or manager, or supervisor — or worker — demands that you possess special qualities. High on the list are skill, training, the desire to succeed, and willingness to work, and I fully expect you to display these characteristics. But these attributes cannot function in a void. As a supervisor, you must also know everything possible about all aspects of your operation and about all your people who do the work. In the long run, it is your people that you manage and lead. it is your people that must follow the standards of discipline you uphold.

If you command, supervise, or manage in MAC, set a good example and expect from your subordinates the sustained integrity to do the job right. To this end, I commend this issue of THE MAC FLYER to your attention. It offers several features on the subjects of self-discipline and human behavior. In light of a recent accident involving flagrant violation of flight directives, I especially recommend that you read carefully "The Challenge of Choice." These features stress elements for success that have not changed since George Washington's days.

Paul K Carlton

What does it take to make a good soldier? Knowledge and eye for detail are very important.

The Model Man



by Lt Col Gene Allen,
137 AESq (ANG)

First of all, I don't expect you to believe any of this. After all, you are a flier and I am your friendly flight surgeon. The events I am about to describe can no more be explained by my science of medicine than they can by your science of aerodynamics.

But events do not always have to be explained in order to teach us something. Remember that.

This story had its beginning a number of years ago when I was a very new flight surgeon assigned to one of MAC's C-124 squadrons. Those were the days, you recall, when fourteen-hour legs were a way of life, and fatigue and bone-weariness were much more common than now.

I jumped on with a crew taking an Atlantic run so I could become familiar with the physical stresses imposed on crewmembers.

We landed at Lakenheath to refuel and crew rest. This was my first trip overseas, and since my duties had consisted mostly of checking the sanitation of the coffee jugs, I used my crew rest for a trip to London.

It was a typical British early evening with low clouds and a misting rain. And, as the evening drew on, the clouds got lower until there was a good bit of fog. But since I spoke the same language as the natives, I wasn't at all concerned about getting lost. I figured that when I was ready to head back to the base I would simply find a taxi and be on my way.

I wandered through the quaint narrow streets, not paying much attention to my path, concentrating instead on the contents of the shop windows as the lights of the city came on, one by one.

I had been walking down this street for some time when I stopped suddenly in front of a very modest looking little shop. There was no sign outside, but inside, in the window, was a beautiful array of military miniatures. You probably would have called them "lead soldiers" . . . the kind you played with when you were a kid. But military miniatures are something entirely different. I know, because it is a hobby of mine.

True military miniatures are fantastically detailed, colorful little soldiers. The people who make and paint them are fanatics (I plead guilty) and they spend hours researching the exact uniform or the exact color for a particular period in military history. Volumes have been written about the soldiers of, say, the Napoleonic period, or the Third Reich, to help modelers get just the right detail and color of not only an army, but even of a particular unit in a particular battle. My favorite is the Napoleonic era with its colorful Hussars, Lancers, and Dragoons. A uniform was something to behold in those days!

And if you think miniatures are child's play . . . imagine a tiny infantryman one and a half inches tall. Then imagine painting his eyes blue and his mustache brown before you ever start on such details as buttons, buckles, and weapons. It takes a steady hand, my friend.

Naturally, I went into the shop. I stood for several minutes, admiring the stock of figures, before the owner came up from somewhere in the back.

He was a cheerful looking little man, quite old with white hair surrounding a bald spot on top, and he had the slight stoop that one often sees on old watchmakers, engravers, and similar artisans. There was a twinkle in his eyes, and he smiled as he greeted me.

"Evening, sir," he said. "Was just closing up but glad to see you all the same. We used to get a lot of Yank fliers during the War, but don't see many of you any more."

I couldn't have been more astounded. I was wearing civilian clothes, and had never seen him before in my life. As far as I could tell, there was no way he could have known I was even American, let alone Air Force. But that's only one of the things I can't explain.

I had been admiring a beautifully done figure of a mounted officer of the Scots Greys, a British Dragoon unit of the early 1800s.

"He's a handsome lad, isn't he?" he asked.

I agreed that he certainly was and started to put it back on the shelf when the old man interrupted.

"Have you noticed the flaw?"

Since it had never occurred to me to look for flaws in such a beautiful piece of craftsmanship, I must have looked surprised. I picked up the little Dragoon again and went over it very carefully, the old man chuckling as I inspected everything from the top of the black bearskin hat to the lock on the Paget carbine. Finally I saw it. The horse had one shoe missing.

"Very good," the old man said. "But don't you think the little trooper should have been more observant? He should have noticed the missing shoe before he mounted up."

"But why build in a flaw?" I asked.

"I put a flaw in every one," he answered. "That's the ultimate realism for that's the way we are. All of us. Oh, most of the flaws are not so obvious as my little Dragoon here. You might never find some of the flaws. I know them and that's what matters. You see, I am the commander of my troops here."

He smiled, and then continued. "Every commander must know what his troops can do. He must know how well they have been trained, what their strengths are, and what he can expect from them. But he must also know their individual weaknesses, so he can help them to be better than they are. If he doesn't, sooner or later he will be in for a nasty surprise."

The old man reached behind a shelf of figures and brought out a small wooden box.

"Here, let me show you."

Opening the box he set up a series of six half-finished miniatures. No bearskin hats or scarlet coats this time. Each was dressed in modern flight clothes of the U.S. Air Force.

The Model Man

"I've just started these," he said. "A transport crew from your own Air Force. Rather like the one you came over with, I imagine."

How does he know, I wondered?

"They're all here and I haven't finished with them, but already I've learned a lot about them. They're a fine group, highly trained and dedicated. The same sort of fighting men who made up the Scots Greys, wouldn't you think?"

He didn't wait for me to agree, but held one figure up to the light and squinted his old eyes to see more clearly.

"Look at our navigator here," he said and handed him to me. Pointing to the nav's briefcase, he continued, "This bag he carries. There seems to be papers sticking out of the closed bag. Suggests rather a cluttered bag, I'm afraid. Not so bad really, unless it also means a cluttered mind. If I were his commander I'd notice that, I think."

The old man's eye for detail was fantastic, I thought, as I wished for a glass to enlarge the individual figures.

"And the commander doesn't come off all that well himself," he chuckled. "I'm not sure yet, but those shoes look decidedly non-regulation, even though they are certainly black. Well, no great harm I suppose, but it does tell you something about one's approach to discipline. And this young loadmaster here. There's no doubt . . . he is wearing a ring on his left hand. I'm surprised he's wearing it in London. Still, it suggests a certain laxity about one regulation. Perhaps also others?"

"I'm sorry you haven't finished them," I said. "I'd like to take the whole crew back with me. They're very well done."

"No, they aren't finished. I couldn't part with them until I've learned all I can about them. But since you are interested in the modern era of your own Air Force, perhaps I have something else you might like. Just a moment."

He stepped to the rear of his shop and was gone for several minutes. When he came back he had a single figure. It was cast standing at attention, dressed in blues with flight surgeon's wings on its chest. I noticed all of those details later; the first thing I saw was that the little figure was obviously me. The surprise on my face must have showed.

"Uncanny likeness, isn't it?"

"Yes," I replied. "It can't be an accident. This is . . . well . . . it's me!"

"A very close likeness. Well, sir, I've enjoyed our little visit. Not much business these days. You take him along with you. A gift, if you like."

He paused, thoughtfully.

"Yes, a gift. From a very old man, to a very young man. Perhaps you will find him useful."

He turned then, and began closing the shutters. He seemed anxious for me to leave. I thanked him, offered to pay, and finally thanked him again and opened the door. Then I remembered.

"This one . . . does he have a flaw, too?"

"Oh yes," he answered. "Yes, they all do. But you will have to find it."

Then he turned off the lights. I closed the door and walked out into the dark, damp night.

* * *

That new flight surgeon is quite a bit older now. There are more ribbons on his chest and the resemblance to the finely painted little miniature is not so strong. But I keep the figure on my desk where he gets lots of attention from visitors. I, too, look at him when there's time.

I've been to London twice since that first visit. I have tried, but I have never been able to find the old man's shop or even the neighborhood. I have checked every listing in the London telephone book and inquired among every collector I can find. No one has ever heard of him.

I have never forgotten what he said, though, about a good commander knowing his people. It's one thing that has helped me judge the capabilities of those assigned to me. I've been able to help some overcome weaknesses, and I've been able to place others where their strong points helped us both get the job done right.

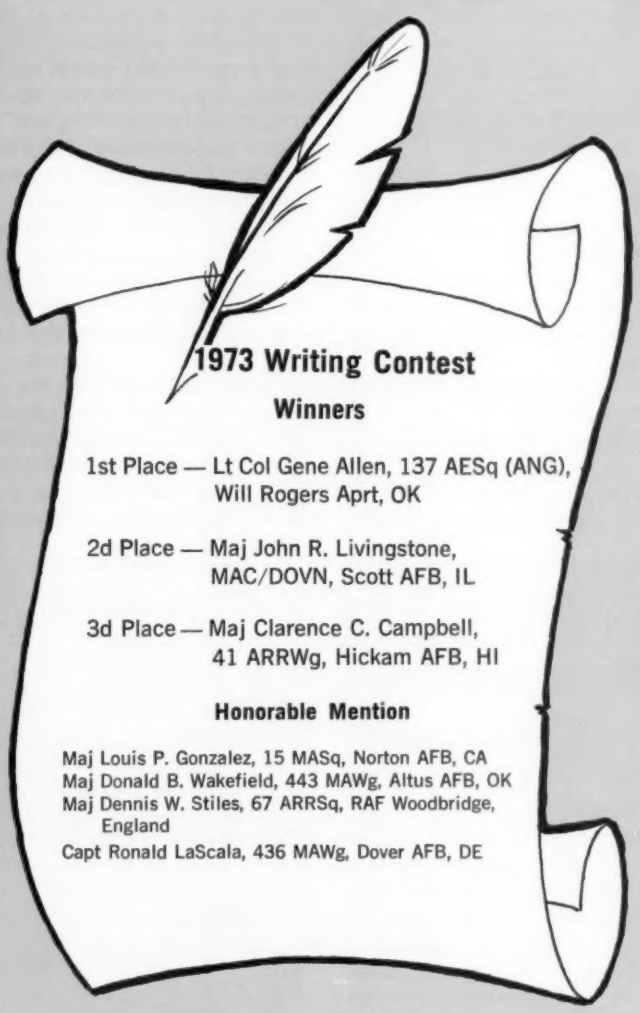
That little model has made me think about myself, too. I've discovered more than one fault of my own by thinking about that misty night in London.

But I still haven't found the flaw in the model. I've been over it literally hundreds of times. I know the flaw is there . . . he said it always was . . . but . . I still haven't found it . . . .

ABOUT THE AUTHOR

Lt Col Gene Allen is commander of the 137th Aeromedical Evacuation Squadron, Oklahoma Air National Guard, Will Rogers World Airport, Oklahoma City, Oklahoma. In civilian life he is a vice-president of an Oklahoma City Bank. This is the second time he has won first place in our annual Flying Safety Writing Contest.

Global Notes



1973 Writing Contest

Winners

1st Place — Lt Col Gene Allen, 137 AESq (ANG), Will Rogers Aprt, OK

2d Place — Maj John R. Livingstone, MAC/DOVN, Scott AFB, IL

3d Place — Maj Clarence C. Campbell, 41 ARRWg, Hickam AFB, HI

Honorable Mention

Maj Louis P. Gonzalez, 15 MASq, Norton AFB, CA
Maj Donald B. Wakefield, 443 MAWg, Altus AFB, OK
Maj Dennis W. Stiles, 67 ARRSq, RAF Woodbridge, England
Capt Ronald LaScala, 436 MAWg, Dover AFB, DE

personnel changes

Lt Col Richard L. Wing, our former supervising editor, was presented with bound volumes of THE MAC FLYER published during his tenure on the staff. The May 1971 to June 1973 volumes were presented by Maj Robert L. Gardner, senior associate editor, in a ceremony held prior to Colonel Wing's departure for assignment as Professor of Aerospace Studies, Wilkes College, Wilkes-Barre, Pa.

Above: Lt Col Richard L. Wing receives bound volumes of the Flyer.

Below: Our new supervising editor, Maj John W. Ray.

Joining the Flyer staff as supervising editor is Maj John W. Ray. He comes to us from RAF Alconbury, England, where he was commander of Det 1, 40 ARRWg.

What's a four-letter word that helps you get the job done safely at off-the-line airdromes? ALCE, of course.

What's It All About, ALCE?

by Maj Garnett C. Brown, Jr.,
438 MAWg/DOXA

Ever wonder about the MAC troops who miraculously materialize around your swept-wing aerospace vehicle after you land at some out-of-the-way, off-line airport? Were you curious about seeing the familiar MAC patch on fatigue pockets at an Army, Navy, or Marine airdrome? Welcome to the world of the Airlift Control Element (ALCE).

The ALCE is a unique organization whose chain of command starts with Headquarters MAC. From there the line goes to the controlling air force and the parent wing. At wing level the ALCE cadre is organized under the Deputy Commander, Operations. It's from this cadre of operations officers, command/control technicians, air ops specialists, and loadmasters that we compose the nucleus of an ALCE team. The purpose of such a team is to provide coordination and support of world-wide airlift operations at non-MAC or non-military installations. Other responsibilities include maintaining the wing/division affiliation program; deployments during contingencies or exercises; and providing the necessary expertise for employing the wing during operational readiness inspections.

The wing/division affiliation program was initiated in 1965 with goals of cross-indoctrination on missions, more effective training in aircraft loading, and faster reaction to contingencies. This program includes Marine and Army units, and allows face-to-face contact between Air Force and sister-service personnel . . . resulting in smoother operations when you, the aircrew member,

An ALCE photo album. Clockwise, from lower left: Wrench benders keep the airplanes going and are an important part of the team; an Army sergeant stands by to drive his jeep aboard: this sign leads to ALCE central; cargo pushers and loaders keep the plane on schedule; the troops are ready to load.

taxi in to do your thing. The 438 MAWg, for example, is affiliated with the 1st Infantry Division at Ft Riley, Kansas, and the 2d Marine Division, Camp LeJuene, North Carolina.

Let's take a look at a simulated deployment. Suppose an Air National Guard unit is making a move, either for relocation, summer training, or another ANG function. They submit a through-channels request for airlift that goes to MAC and then is directed to the appropriate numbered air force. The air force tasks one of its wing's ALCEs for the job.

The ALCE will then contact the unit being moved, and will probably send a loadmaster to the unit for mission coordination and load planning. This will determine how many aircraft loads will be required to do the job. While it sounds simple, this is a critical task. In many cases the unit involved has only a rough idea of what they need for a move. The loadmaster's experienced eyes are real assets in determining not only how much, but also in determining the best way to prepare the loads . . . palletize, floor load, store on trucks, etc. Additionally, they must document their load planning with manifests, DD Forms 1387, and other appropriate paperwork.

The next step is more coordination with the controlling air force and the parent wing for airlift. If we have eight aircraft loads, do we do it with eight airframes or with four airframes making two shuttles each? Or two airframes making four shuttles? Or . . . get the idea? The success of the entire operation begins in the planning. Many variables are considered: crew duty day, availability of refueling, billeting, messing, maintenance, overload transport, airport facilities, air traffic control considerations, requirements of the unit being moved, airframe availability, and any number of other items that could affect the mission. Once requirements are defined, the wing which has been given the airlift mission notifies the squadrons of the dates and crew requirements.

In the meantime, the ALCE cadre is busy forming a team. Depending on the scope of the operation, a number of people may be required to augment the ALCE. The number of personnel deployed depends on several factors: How many aircraft will be on the ground at one time? When will they arrive and depart? Will a two-shift (24-hour) operation be required? Are the crews staging or crew resting? How far from the airfield are the billets? Is refueling required? What local support is available versus what must be flown in to support the operation? Are there any local restrictions to consider? Once these questions are answered, planning can begin in earnest.

An ALCE team, depending on size and mission, can be organized with a mission commander, ops duty officer(s), ops NCOIC, and maintenance and traffic personnel. Larger deployments can also include safety, weather, supply, communications, transportation, and POL personnel. Virtually every functional area can be represented on an ALCE deployment. These augmentees usually come from the parent wing, but the controlling air force can task other wings for personnel. An ALCE deployment can be compared to having a "little wing" in the field, with all the attendant problems and considerations.

Several days before the mission gets underway the parent wing ensures a support aircraft is set up to take the ALCE team and their equipment to the deployment base(s). Usually there will be ALCEs at both ends of the operation (not necessarily from the same airlift wing) — one to load the unit on the aircraft and one at the offload base to unload them. Team members are thoroughly briefed on the mission, location, number of aircraft, duty hours, and what is expected of them. All this premission activity pays off for you, the crewmember, when you taxi off the macadam and that familiar-looking fellow blocks you in.

Once deployed, an ALCE works directly for the controlling air force, rather than for the parent wing. (Note: During an ORI, the ALCE works for the wing.) Depending on the size of the ALCE, its services may be merely to block you in and out, offload or onload you, and send your messages, or it may be able to offer all the services of a wing ACP.

You say you've encountered ALCEs right on a MAC base? Yes, that could be. The ALCE isn't restricted to off-line operations. It can be responsive to special airlift missions, joint training exercises, contingencies, ORIs, and affiliation program requirements.

That, in a nut-shell, is what it's all about. Working with an ALCE can be a pleasant experience because the men of the ALCE are interested in the same thing you are: a smooth, safe, uneventful, on-schedule flight. The ALCE team has an advantage over the home-drome operation in that it functions more easily as a team once all the home-based parochial interests are removed. You'll usually find everyone on an ALCE moving in the same direction you are. Those of you who find this refreshing may gain a new insight into ALCE's goal: safe, coordinated air mobility.

See you "off" the line!

Summer is construction time around the airpatch. Learn to look for the signs and beware!

Species Constructorus

by Lt Col T. J. Slaybaugh, USAF (Ret)

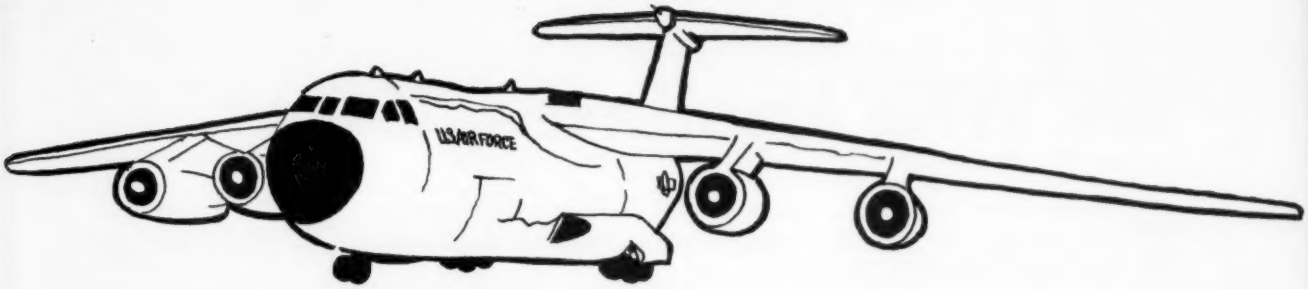
If one were to stand off in the sky some place and study an airfield, he'd probably see a bunch of upright ant-like figures scurrying about. Some would be carrying small tools, some would be operating machinery, a few would be aimlessly maneuvering blue vehicles, and there would likely be one or two standing on tiny piles of dirt and supervising.

One could see that those who make the airfields their habitat are intensely interested in all sorts of changes. They dig holes, move their holes about, gnaw up chunks of concrete so they have a place to put new loads of concrete, paint new lines (and new lines over old lines), stick poles in the ground, put up barricades, and light flickering lanterns to stake their claims overnight.

Of all their favorite activities, digging has to be first. They dig trenches just to have something to build barricades around. Sometimes, the more persistent ones dig their trenches across runways. They haul dirt and gravel to and from their diggings, dribbling bits and pieces on runways and taxiways, on the outsides of turns, and wherever they cross drainage depressions.

The transient ones habitually come out in spring, but are likely to appear any time. They are a gregarious species and rarely work off in some isolated corner of the field. They particularly like aviators, and get as close to them as possible. They string wires alongside runways, burrow under runways, work around taxiways and probably, more than any other place, tear things up at and around the ends of runways. Obviously, they like to be where the action is. Some surmise that they OJT on taxiways, then move to runways.

Another favored airfield habitat is the ramp. These ants obviously delight in digging exploratory holes in the most awkward places so that airplanes must taxi way out of their way. Sometimes they usurp so much of the ramp that aircraft have to quit using it altogether. But this is probably unintentional. It appears that if they've properly planned their ramp activity they leave just



barely enough room for aircraft to squeeze around. Obviously, this is one of their objectives as they then stand and watch with great delight.

Then there is the resident species. They aren't as numerous, but they do exhibit devious traits similar to the transient. Many can be distinguished by their white coveralls. Most of their vehicles are yellow. They do some good things: replace burned out lights, mow grass, sweep stones and dirt, and lead airplanes. Leading airplanes gives them contradictory pleasure, as they either lead them off to some far, desolate corner of the field, or into the most congested area of the ramp.

Mostly, they seem to be friendly, but not always. They have a habit of leaving fire extinguishers and chocks scattered about on ramps, or sometimes showing up late, and occasionally not at all. This is particularly bad as impatient pilots' airplanes have taxied into poles and other obstructions.

Neither the transient nor the resident species ever coordinates with a species on another airfield. Their work is similar, but nonstandard. Overruns on the ends of runways vary in length and load carrying capability. The lights may be flush with the edge of the runway, or out in the grass a few feet. Sometimes they leave dropoffs at the runway ends, sometimes trees and hills. They may build things like barrier stanchions and light bases adjacent to the runway edges. They may align all the approach aids, or part of them, or none of them.

They do a lot of work, and they make a lot of work. They keep life from getting tedious for operations types, and are the cause of many of the notams that must be sent.

They're unpredictable — helpful at times and extremely dangerous at others. It's hard to tell the good ones from the bad; and there is no open season; aircrews have to learn to live with them.

Before you fly, try and find out what the species constructorus are doing, both at the airfield you are flying from and the one you intend to fly into. As with all strange creatures, having knowledge about them is your best protection.

He Who Hesitates, Loses

When less than two minutes can make the difference between life and death, it pays to ask for help *before* you need it.

The four-engine transport moved quickly through the night towards its destination. The departure base lay almost 2,000 miles behind, and, with home station only an hour away, the crew was preparing for the landing. It was a little early for the checklists, but the aircraft commander was discussing his plans with the crew.

"The weather's not too bad. Forecast to be four or five hundred feet and a mile. We'll plan on an en route descent with a radar handoff for a GCA to runway zero one. I'll back it up with the ILS. Sarge, start figuring me a TOLD card, will ya?"

"What about the flaps?" asked the copilot. On departure the flaps had been sluggish at first, then finally they retracted in short jerks. The AC had been able to control the aircraft easily and, after ordering a scan of the flaps, had forgotten all about them.

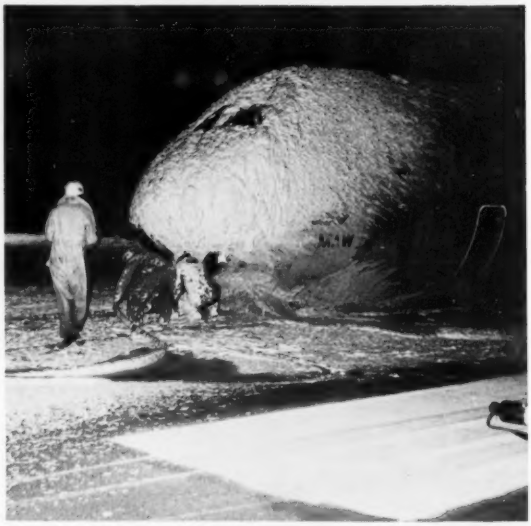
"No sweat," he replied. "We'll write them up after we land. They might be binding a little. Keep an eye on them during the approach."

The remainder of the flight was normal. When they got in the radar pattern, they learned the weather was down to three hundred and three quarters. The crew forgot about being tired and concentrated on the approach and landing. When the aircraft commander called for his first flap setting, he subconsciously rolled in a bit of aileron trim to compensate for the left wing suddenly becoming a little heavy. The flaps went down smoothly enough, and the copilot didn't notice anything wrong. Concentrating on flying as perfect an approach as possible, the AC acted with a conditioned response when they broke out of the overcast.

"Flaps full!" he called. The copilot, his eyes on the runway, positioned the flap lever without watching the indicator.

The right flap went to the full down position, but the left flap didn't. The inboard portion of the left flap went down far enough to keep the lockout mechanism from functioning, but the outboard portion was still up. The middle of the flap was twisted and torn, and a gremlin could have seen the jack screws had sheared.

The sudden roll — a mere hundred feet in the air — would have been spectacular viewed from the ground, but it was terrifying viewed from the cockpit. The AC cranked in full aileron trying to pick up the left wing. He kicked the right rudder and called for flaps up just as the left wing dug into the runway. He did a very good job considering what he had to work with, but the aircraft spun around and went off the runway backwards, shedding landing gear, engines, and a wing. It broke up completely just before it finally came to rest.



Two crewmembers, both badly burned, miraculously survived. The other four did not. Could they all have been saved? We think so. Let's see why.

Forethought

To begin with, the aircraft could have been saved had the aircraft commander told the scanner to check the flaps as they were positioned to the first setting. The scanner could have told him the left flap appeared warped, and the pilot could then have landed without again touching the flaps. He suspected the flaps were binding after takeoff, and he could have made a no-flap landing as a pre-

caution, advising the tower of his impending difficulties.

Next, the AC could have declared a "precautionary" landing. This would have alerted at least part of the fire department's crash rescue team. They could have been standing by and possibly saved more crewmembers. If the AC had declared an emergency, all the crash equipment would have been pre-positioned and perhaps all the lives could have been saved. The first two or three minutes after a crash are the most important and can make the difference between life and death. As it was, the crash crews were on the scene in less than three minutes . . . rapid response to trouble, but too late for all but two of the crew.

This account, thankfully, didn't happen. However, it typifies many accidents, military and civilian, which occurred over the years — accidents due, in part, to pilots failing to use all the resources available.

Do you know when you should declare an emergency or precautionary landing? Or what happens when you do? How can you help the crash rescue crews help you? These are some of the questions we'll answer.

The Crash Rescue Crew

The make-up of a crash crew varies from base to base, but remains basically the same. It includes highly trained rescue and fire-fighting technicians and very specialized equipment. They serve many functions on an air base, but we're concerned with only one — saving lives.

The next time you find a little time on your hands, stroll in and see the fire chief at your base. Ask him, or one of his men, to show you around the station. Talk to him about his job and how it affects you as a crewmember. We tried that here at Scott and found the visit both interesting and educational.

The first thing we asked was, "How do you get alerted to an emergency, a crash, or a potential aircraft problem?" The answer was simple: "By a hot line from the control tower." That should tell you something right there. The crash crew folks aren't mind readers. If you have a problem and keep it all to yourself, they won't be alerted.

When that hot line rings and the tower operator tells the duty officer you are 20 minutes out with an engine shut down, things start happening immediately. All available equipment is positioned along or adjacent to the runway. If you reported a brake problem, for example, the majority of the equipment would be placed near the overrun. If one main landing gear was jammed up, they'd position their equipment on the side of the runway from your probable path. Other factors that influence the positioning of equipment include the size and type of your aircraft, your load, and the wind.

If you have a gear problem that requires foaming the runway, the fire department can lay a strip of foam ten feet wide and 2,400 feet long in ten to twelve minutes. The foam will last, depending on wind and weather conditions, about an hour, so timing is important.

Remember that line from the "Itazuke Tower" song, "I cannot call the crash crew out / This is their coffee hour"? Don't you believe it! The crash crew is on call 24 hours a day, seven days a week. When they receive a call they respond as promptly at 0300 as they do at 1500. The men of the crash rescue crews, military and civilian, are dedicated professionals. They don't mind scrambling in the middle of the night to watch you make an uneventful precautionary landing. They're as glad as you are that nothing happened. These professional firemen don't consider it a nuisance to do their jobs. The ride back from the runway after watching a safe landing is usually very quiet, due to the universal relief that a crash didn't occur.

At most bases, the crash crew will back you up whether you ask or not. If you advise the tower you'll be making a precautionary landing, they'll send out a fire truck or two just in case. The type and number of vehicles will depend on the type and mission of your aircraft. For example, an air evac aircraft might get two fire trucks while a T-29 would get only one.

If you've declared an emergency, all the equipment is scrambled. It makes no difference what

He Who Hesitates, Loses

kind of emergency you have so far as types of crash rescue equipment are concerned.

Earlier we mentioned those important early minutes of an aircraft fire. Some of the fire-fighting equipment can pump a fantastic 1,400 gallons of water per minute on a blaze, but the capacity of the equipment is only 2,700 gallons. Even with several of these units available, the early minutes, so far as your life is concerned, are the most valuable. A transport aircraft can burn completely in about one minute. If that doesn't impress you, consider that a fire in an aircraft can, in just four seconds, raise the cockpit temperature to more than 1,300°F! That can make a dignified exit, still breathing, somewhat difficult.

When to Ask for Help

If you decide on making a precautionary landing, why not stack the deck in your favor by calling out crash rescue? When in doubt, call them out! Compare this to trying to explain why you didn't declare your problems — after your aircraft is sitting on the runway, reduced to a pile of tangled, smoking aluminum.

If you have serious troubles, there's no question about when to declare an emergency. When a gear or engine problem exists, for example, most of us want the whole world to know. We expect to turn final and see what looks like a Chinese New Year celebration in the vicinity of the runway with everyone from the chaplain to the commander down there rooting for us.

For some reason, however, if the problem doesn't appear to be too severe, many pilots feel it's a sign of weakness to ask for help. The "No sweat, I can handle this alone" philosophy just isn't smart. You're being stupid, not brave, when you risk the lives of others due to your own false pride or ignorance.

It's easy and it costs nothing to declare an emergency. Not only do you receive priority handling in traffic, but the crash equipment is automatically provided. For a precautionary landing, you may or may not get the equipment, depending on the policy at your base — but you can always request it.

It's a reassuring feeling to know that if you really get in a bind and something happens during a landing or takeoff, the fire department is right there to help. Don't forget, though, the crash crew must don heavy clothing, get in their vehicles, start them, and drive to the scene. One source estimated an increase in response time of 150 percent! By then, even though that may be only a couple of minutes — it could be too late!

Summary

What can you do to help the crash crew help you? There are several things.

When you notify the tower (or controlling agency) about your troubles and intentions, be specific! The tower will pass this important information on to the fire department. Adequate information about the type of malfunction determines where the crash equipment will be positioned.

Tell them where the people on your aircraft are located. If you have four souls forward and one aft, tell them. If everyone is in the cockpit, tell them so the rescue personnel won't waste valuable time fighting fire in the tail while you are roasting up front!

If you are carrying cargo that is explosive or otherwise hazardous, pass on that information. Give the fire fighters all the available information so they can better prepare to help you.

Time is very important in another respect. Don't wait till the last minute to declare an emergency or precautionary landing. Your situation could deteriorate in those last critical minutes when you can least afford to be talking on the radio. If your precautionary landing turns into a full-blown emergency before you land, you'll be glad you already made that call for assistance.

Four points to keep in mind are:

* Relay all information about your malfunction that could affect aircraft control.

* Remember your chances of getting out of a crashed aircraft are 100 percent better if the crash equipment is prepositioned by the runway.

* After making a precautionary landing, let the fire chief visually check your aircraft as soon as you clear the runway. A good chief won't delay you more than 30 seconds, and he can prevent you from causing serious trouble on the ramp.

* When your emergency is secured, a call to the tower to release the crash equipment is desirable to prevent any confusion as to whether or not they may still be needed.

The next time a gnawing little airborne problem makes you wonder, don't hesitate to call for help. It won't cast aspersions on your ability as a pilot, but instead will reflect your professionalism. A good aircraft commander places the lives of his crew and passengers, his own life, and the welfare of his aircraft far above any other considerations. Don't let pride lead to your downfall!

(Adapted from 4500 ABWg Flying Safety Newsletter)

SOAP System Integrity

In the flying game, we have several systems to protect ourselves and others from the "grim reaper." Some of these are inspection system preflights, post-flights, and the like. There is still another one, the SOAP system. (SOAP stands for Spectrometric Oil Analysis Program.) For this system to work, each individual connected with the system has to have personal integrity and a belief that the SOAP system will prevent aircraft accidents.

Some of the old timers don't believe in SOAP or anything else that is not 20 years older than they are. They will tell you how well the planes flew in the "good old days" when they were turning wrenches, and all that is needed now is some of that "old spirit" to keep the new planes going. Well, that is not necessarily so. There have been a few inventions in recent years that make flying safer and decrease the workload all around. In the "good old days," the major aircraft accident rate was so high that more combat aircraft were lost to accidents than to enemy action. Even recently (15 years back), the rate in some units was more than ten times as high as the USAF 1972 rate of 3.0. These new ideas — applied with integrity and loyalty — can prevent aircraft accidents.

Now, how does this SOAP system work? It starts with the person who takes the oil sample. He must take the sample according to tech order instructions.

After the sample is taken, it goes to the SOAP laboratory, usually by way of the flightline monitor. He must also follow certain procedures, or the system will fail.

When the sample arrives at the lab, it is up to the evaluator on duty to maintain the system's integrity. He has the most complicated portion of the job, but it is no more or less important than any other step in the chain. At this stage of the game, it becomes critical; this man has the responsibility of making the evaluation. If the sample checks out good, he lets the aircraft go; if it checks bad, he calls for another sample.

This starts the sequence again with the crew chief who again takes a second sample. If this sample doesn't check out, the evaluator recommends certain steps to be taken, and the ball is passed to maintenance where corrective action is initiated.

It boils down to you; either you have integrity or you don't. SOAP doesn't prevent accidents — you do.

THE MAC FLYE

ROLL OF

AS OF 1 JANUAR

CONSECUTIVE ACCIDENT-FREE FLYING HOURS

750,000

436 MAWg 437 MAWg

500,000

76 MASq

400,000

89 MAWg

300,000

3 MASq 41 MASq
14 MASq 75 MASq

200,000

4 MASq 98 MASq
20 MASq 99 MASq

100,000

1 ACGSq 57 MASq
9 MASq 86 MASq
15 MASq 939 MAGp
40 ARRWg (Assoc)

60 MAWg Sp
438 MAWg M
1605 ABWg
436 ABGp
137 MAGp (
170 AAGp (
1 ACGSq
3 MASq
7 MASq
14 MASq
41 ARRSq

OF HONOR

JANUARY 1973

CONSECUTIVE ACCIDENT-FREE FLYING YEARS

20 YEARS OR MORE

89 MAWg	76 ARRSq	76 MASq
98 MASq	99 MASq	

10 THROUGH 19 YEARS

0 MAWg Spt Flt Ops	41 MASq	Det 1, 40 ARRWg	Det 17, 42 ARRSq
38 MAWg Msn Spt	54 WRSq	Det 2, 40 ARRWg	Det 3, 43 ARRSq
605 ABWg	54 ARRSq	Det 3, 40 ARRWg	Det 10, 43 ARRSq
36 ABGp	57 MASq	Det 7, 40 ARRWg	Det 14, 43 ARRSq
37 MAGp (ANG)	67 ARRSq	Det 8, 40 ARRWg	Det 4, 44 ARRSq
70 AAGp (ANG)	75 MASq	Det 10, 40 ARRWg	Det 6, 44 ARRSq
ACGSq	301 ARRSq (AFRES)	Det 2, 42 ARRSq	Det 8, 44 ARRSq
MASq	303 ARRSq (AFRES)	Det 5, 42 ARRSq	Det 11, 44 ARRSq
MASq	305 ARRSq (AFRES)	Det 12, 42 ARRSq	Det 12, 44 ARRSq
4 MASq	Det 1, 39 ARRWg	Det 14, 42 ARRSq	Det 18, 44 ARRSq
1 ARRSq	Det 4, 39 ARRWg	Det 15, 42 ARRSq	Det 26, 44 ARRSq
		TUSLOG Det 84	

Hey, crewmember: This article is for you. And when you finish, take it home for your wife to read. You'll both be glad you did.

Tuning the Inner Man

Under ideal conditions, a pilot is as finely tuned as a good violin. It would be dandy if this were always true. The trouble is, a pilot is a human being and gets out of tune as easily as a violin. It doesn't take a major catastrophe to do it, either. For no apparent reason, a pilot can wake up flatter than a three-dollar guitar.

A pilot gone sour needs a tuning job immediately or he may do something like plunging three counties into darkness by dragging down several miles of high-tension wire. When such an event takes place, dozens of people converge on the scene to launch an investigation that would make Sherlock Holmes reel with admiration. The aircraft is pieced back together, witnesses are questioned, and weather charts are consulted. If the pilot happens to be available, he has his brains picked. Every stone for miles around is turned at least once. And all too often the investigators pack up their statistics and move on, dolefully muttering, "pilot error."

Pilot error?

There is more here than meets the eye. The term is a large one and covers certain mysteries of human behavior.

Is simple ignorance pilot error? Obviously, if you put National Plowing Champion Elmer Snodgrass behind the controls of a C-141, something awful will happen. Tussling with tractors is Elmer's bag, and he can't be guilty of pilot error. The fault lies with the person who would let old Elmer try to fly.

An error can be committed only by a man trained to know better. Experts sometimes refer to this kind of error as the "human factor" behind accidents; everything the pilot did or failed to do that led to the crash. And why.

The why is often the mysterious part. Many times the pilot can't say why himself; if he could, he wouldn't have crashed in the first place. Here is the cold truth: a man who has performed a simple action the right way hundreds of times suddenly does it exactly backwards.

What goes on here?

One answer is that accidents involving human factor occur when the pilot is not functioning the way he should. He's out of tune, running a little rough, developing a ping. Nothing really wrong, but he's ripe for conditions where the investigators will label the bash "pilot error."

Most anybody can spot a man in the clutches of chilblains, whooping cough, or the seven-year itch. Pilots with such ailments go DNIF until cured. But spotting a man slightly out of whack is not quite so simple. He may be out of tune physically, emotionally, or both, and the naked eye sees nothing. He may act cheerful and yet be gnawed on by

money problems, the state of a sick child, or the wanderings of a wayward wife. His personal problems can be running him into the ground while he still looks as serene as a poker player with four aces.

The human being is complicated, and some emotional disturbances are brought on by causes so deep a pilot doesn't even know they're there. All of us are constructed out of a mass of instincts, fears, anxieties, resentments, frustrations, reactions, and desires, but we still make out all right — most of the time. Still, if one of these inner anxieties gets out of hand, we can be in for trouble.

Take this business of flying. For all of us, it's an unnatural act. Man is a creature of the land. We may get used to being aloft, but we'll never be fully at home there. We all share a touch of natural fear or apprehension about being up there with the birds.

Anxiety

A curious fact about anxiety is that you don't actually have to believe in a superstition to have it affect your actions. An Army pilot lost two of his friends in closely-spaced accidents. Now this pilot knew that stuff about accidents happening in threes is strictly stupid — and in theory he was having none of it. Still, his flying mates noticed he was becoming moody and withdrawn and his ability deteriorated almost visibly. In spite of himself, he was becoming obsessed with the idea his number was up. Coming in for a routine landing one day, he overlooked a fence across the end of the strip and snagged his underpinnings. Luckily he was only scratched, but his lapse could have made the it-happens-in-threes mumbo-jumbo come true.

What happened? This pilot allowed his natural apprehension to affect his judgment until plain raw emotion took over. Chances are if this fellow had the good sense to tell somebody what was eating him, the whole affair might never have happened. Bottled up emotion and weird ideas can grow in the human mind. That pilot may have been trying to make the old superstition come true.

While pilots upset by genuine fear of flight or old superstitions are rare, people (pilots included) with some kind of trouble are not. No one wants you to be a do-it-yourself flight surgeon or psychologist, but a capacity for mature self-appraisal is a valuable asset. A grown mature man should not be afraid to ask others for help. A gnawing little fear or anxiety can grow to absurd dimensions unless you tell somebody about it. The thing to do is **tell somebody.** There are friends, fellow crewmembers, roommates, and wives — all usually ready to lend a sympathetic ear. And don't forget the man you work for — he's directly concerned with how well you can do your job, and you've got to keep him clued in on your needs and problems.

Here's a side note for commanders and supervisors: if you remain cloistered in whatever passes for your ivory tower and refrain from fingering the pulse of your immediate subordinates, your supervising competence is pretty low. Part of your job is to be on the lookout for strain and anxiety in your troops and to exercise the necessary degree of humanism to keep these troubles from damaging your capacity to perform your mission.

The Wife's Job

The pilot who has a good kitchen mechanic can count his blessings. No woman can live with a man very long without getting to know him fairly well. His whims and quirks (like eating chocolate syrup on salami and rye sandwiches) become part of her storehouse of knowledge. She becomes the world's leading expert on her husband.

Just as a good power plant mechanic can cock an ear at an aircraft engine and tell if it is out of whack, a good kitchen mechanic can listen to her husband (or watch him a while) and tell that he's not in top shape either. And, like the aircraft mechanic, she knows what to do about it.

A man needs somebody to tell his woes to. Worry causes confusion, while confiding usually brings relief. With a load off his mind, a pilot's efficiency in the air goes up sharply. So an experienced wife spends more time listening than her husband will admit. She learns early that her job is just about as complex as her husband's. It has at least four separate functions:

1. providing a well-run, happy home,
2. keeping the lad in tune,
3. encouraging him to do his best, and
4. understanding the nature of his job.

Clue Wifey In

If a pilot chooses to clam up about his job, his wife can do little except speculate whether he's managing a parakeet farm or maybe counterfeiting three-dollar bills. This is a poor recipe for a contented wife or a happy home. Most wives do care, and lucky the man with sense enough to let his wife help him.

Not many young wives know much about flying. Few of them have set foot in an aircraft. Their notions of flying are derived from old television movies, magazine articles, and an occasional

glimpse of the flightline by the BX. Wifey may be dimly aware that her husband's job is (a) glamorous and (b) dangerous and why don't they wear those darling riding britches anymore? She may think her man sails off into the wild blue each day and plays among the clouds. And then she can't understand when he comes home looking as if he's spent the day digging ditches.

You owe it to your wife to see that she isn't left in the dark about your job. She doesn't have to know how to operate every gimmick in the cockpit, but she must realize what your problems are. And she needs to have a reasonable degree of access to your boss — partly so she knows she's on the team, too, and partly so the boss has access to another "expert's" views of hubby. (Bosses: take note!) A wife properly checked out by her husband is an understanding wife — the kind that keeps a stiff upper lip when he calls in from 500 miles out to say he's weathered in and won't be home until tomorrow. She may be disappointed at missing the club dance, but you won't hear her complain. She's one wife who will never encourage her man to stick his neck out and try to beat the weather. That girl is a sound member of the family team because her husband has let her in on the tricks of his trade.

Casa Bullfiddle

Let's take a look at the homestead of Lt Rhett Bullfiddle. He's a fine pilot, but most of the time he's tired and jumpy and about as out of tune as you can get. He doesn't know he's suffering from chronic fatigue and more than one night's rest is needed to repair him.

When he gets home at night he's met by a tale of woe that would wring the heart of Scrooge. The washing machine has given up the ghost, the dog bit the postman (again), Junior has been expelled, and the landlord is raising the rent.

Staggering under his burden, he sits down to a meal that turns into a fight to get the baby to eat his oatmeal. Then wifey announces she's about had it with being cooped up, so dinner is followed by a trip to the club and another unsuccessful effort to win the grand prize, a 50-foot cabin cruiser. It is past midnight before he finally gets to bed.

The next morning our hero is up at five in order to be at the flightline by six. He gulps two cups of black coffee and goes to work. He's already behind his own goal line.

What poor Bullfiddle needs is a home. He needs an understanding wife who appreciates the fact that the world holds more than a bingo prize. He needs a wife who will get up in the morning, cook his breakfast, and send him out in good humor. He needs consideration.

A man who has those things is ready to fly. All Rhett Bullfiddle is ready for is trouble. Bullfiddle is a bit depressed and vaguely discontented, a state which psychologists call developing a resentment complex. He's ready to snap a string. He is at odds with his wife, the world is against him and he's busy simmering a pre-accident stew.

This resentment complex may well be one of the great unknown causes behind accidents. A man doing a slow burn inside is likely to stretch the rules, violate good habit patterns, and wrench his flying machine around as if it were a bulldozer. In short, caution goes over the side. Then he's in trouble.

The Lows

Bullfiddle's case hopefully is an extreme, but all of us have days when it doesn't pay to get up. Even in the best-ordered households, wives weep and strong men shudder. You cut yourself shaving, the little woman burns herself cooking your bacon, and the baby has red spots all over. You hit the garage door backing the car out, and halfway to the base you remember you forgot your wallet.

What can you do?

Sit tight, take a couple of deep breaths, and face the fact that this isn't going to be your day. Apply the brakes. If you're going to live through the day, extra caution is in order. You're just not up to the mark.

Since we're all different, there is no exact human yardstick we can use to measure just how far off we are. The only check we have is how far off we are from the way we usually feel. Stop and take

a long, cool look at yourself — you're the only one who can.

The Highs

Even feeling too good can be bad. Have you inherited a fortune? Gotten a new son? Been promoted? Great! But keep a firm grip on your emotions or you'll turn into just as much an aerial cowboy as Bullfiddle.

Have a care. Complacency or inattention can lurk behind the error that lies behind the accident. It's a safe guess that high spirits have caused some accidents. Everyone admires the man who whistles while he works. The trick is not to let the whistling reduce your attention to the job at hand.

The Droops

The first lesson a budding pilot learns is that more skill and cunning is required to come down than to go up. There's no real mystery about that, but what we may fail to consider are the special psychological and physical factors that can catch us off guard.

A fellow taking off in the morning on a long flight may not be at 100 percent of his physical and emotional capability, but he won't even notice. Takeoff only requires about 50 percent of his capability. Level flight calls for no more than 20 percent. But then he flies for several hours, lowering his energy reserves. Toward the end of his flight the pilot has narrowed the margin between what he needs and what he has. Landing may require 60 percent (or more) of his full potential. At this point he may have only 80 percent of what he started with, which doesn't leave much to play around with. What's more, this capability varies wildly with individuals and isn't precisely measurable. If this pilot is worrying about the little woman or dreaming of a good steak instead of putting the gear down, he's setting himself up as another victim of "pilot error."

Chow Time

What pilots eat (or fail to eat) is another factor behind pilot error accidents. The human body is a machine that works on energy from food it consumes. While you wouldn't consider trying to fly an airplane on dishwater, you might try to scrape by eating: too much, too little, or improperly.

Let's return to Rhett Bullfiddle. He didn't get a real breakfast. A cup of coffee has no calories, so Bullfiddle is coasting along on the food taken aboard the night before. His blood sugar level is low, so his capability has been reduced right at the start. Sure, a soft drink and flight lunch will raise his energy level a bit, but it isn't going to stay there all day. Bullfiddle has nothing in his reserve tanks. Coming in for his final landing, he has to crab into a crosswind. As he touches down he forgets to straighten out. Bang! go the tires or a wing tip.

Pilot error? How about the lack of a sound diet? It can be the death of a man in more ways than one. Mrs. B. may not look ravishing over a hot stove at 6 am, but she won't look any better in mourning black.

Overstuffing can be as bad as undereating. A sound, well-balanced diet is every bit as important to a pilot as a sound, well-balanced mind. Your kitchen mechanic should know this. Her husband shouldn't look like a department store Santa Claus. And he shouldn't stumble out in the morning with nothing but a cup of coffee to hold him, either.

Team Effort

Nobody has to go it alone in this world, and no team is more important than the husband and wife. For people who fly, a well-arranged home life can make the difference between doing a job decently or miserably.

A husband's and wife's team assignments are different but related. The pilot should try to cultivate a well-adjusted personality; the capacity for mature self-appraisal; an understanding of normal emotional upheavals; a sensible approach to personal problems; and a normal home life. A good wife must develop an understanding of her pilot's job; the capacity to shoulder her share of the family burdens; the ability to keep her husband at the peak of his game; and the considerable skill required to provide a real home. A good marriage is a work of art produced by a team. (Another note for bosses: the on-the-job teamwork between you and each subordinate is sort of a mini-marriage.)

How well you carry out your team assignments is a measure of how responsible a person you are. The same goes for your wife. No flat notes, please. No Bullfiddle syndromes. No curious mental quirks which lead to "pilot error" when bottled up inside.

A man is the sum total of everything he has ever done. As the medical men say, "If you've never been confronted with a particular kind of emergency, you haven't had enough experience." You can apply that to flying, too. The longer you fly, the more emergencies come along to test your abilities. Only a finely-tuned responsible man can successfully cope with them all as they arise.

We think that even one Lt (or Mrs.) Bullfiddle is one too many.

Exhaust gas temperature is an indication of the health of your engine.

It Pays to Watch

The pilot of a small jet was on final when the truck pulled onto the runway. The pilot swore and jammed the throttles to the firewall and the EGT needle nudged 700°C. He throttled back and the temperature dropped down to the green.

* * *

The operation was a hectic one. The pilot knew the importance of watching the EGT gages, but he was so engrossed in getting out of that crowded field into a less crowded sky that he didn't watch them long enough. Unnoticed, number 3 EGT skyrocketed. The fire warning light caught the pilot's attention . . .

* * *

The Effects of Stress

If you consider the effects of internal temperature, structural loading on engine parts, and the length of time an engine is operated at high thrust settings, you can do much to prolong an engine's life. There is a direct relationship between engine abuse and premature removal.

Take the case of the fellow who started up and failed to notice an overtemp. The first person who knew something was amiss was a ground crewman who observed a 12-foot torch start a grass fire!

The cause of the overtemp was a malfunctioning fuel control. The cause of the burnout: not monitoring the gages. During an engine start it is particularly important to watch fuel flow and temperature, not just for indications, but for operational trends. Are they increasing properly, or are they racing to the top of the scale? If you never exceed the operating limits, you give your engine the best possible chance for a long and healthy life.

Any material will take a permanent set (stretch, bend, bow) if it is subjected to enough stress. After a certain amount of permanent set, the fibers or grains of the metal begin to pull apart and generate fine cracks. With additional time under load and temperature, the material will deteriorate further, until it finally fails.

That is why thrust ratings and operating limits are specified in section V of your Dash One. These limitations are there to furnish all the engine performance possible, yet retain engine dependability between the overhaul periods.

The term "creep" has been applied to the process of elongation and deformation of metal parts in your engines.

Creep is usually very small over the life span of an engine, but its rate increases drastically as you approach operating limits. In the high thrust range, an increase in EGT of only 18°C may double the rate of creep.

In addition to turbine blade creep, working an engine too hard or too long will cause abnormal deterioration of other engine parts such as turbine nozzle guide vanes and turbine seals.

Time Limits

Time limits were established for various power settings to conserve engines and to make the time between overhaul predictable. This standardization of operation still can't prevent a careless pilot or maintenance man from wearing out an engine well before its time.

The engine manufacturer determines what the original time between overhauls should be. He bases his decision on knowing approximately how long each engine part will last at various power settings. Obviously, the engine will not fly apart the minute the time limit for a particular thrust setting is reached. But if you exceed those limits, the time between overhauls may be shortened and premature aging may lead to a failure just when you need the engine most.

There is no operational technique that can reverse the aging of engine hot section parts. Conservative engine operation will not repair damage caused by previous abuse. What will help? Limiting your operation at very high thrust settings

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This article was adapted from remarks by Mr. Norman E. Borden, Jr., of Pratt & Whitney Aircraft, and from General Electric's Flight Propulsion Division Service News.

Those Gages!

serves several purposes. It permits a cooling period between operations at high thrust, and provides a distribution of the rate of wear over the engine's life. You won't gain a thing by reducing a thrust setting for only a moment or two and then going back to the higher setting just to keep "within the time limit." Ideally, the engine should be operated at reduced thrust for as long as it was at high thrust.

EGT Limits

Section V of your Dash One lists EGT limits for the engines on your aircraft. The time limit for takeoff and military thrust settings applies to the use of the thrust setting and not to the length of time that an engine may be operated at that particular maximum EGT. A note under the table of Operating Limitations points out that the EGTs shown for thrust settings below normal rated thrust are not limits. They are the EGTs for each level of thrust which, if exceeded, may indicate an engine malfunction.

For example, during an engine start, high EGT combined with low rpm and engine pressure ratio (EPR) probably signifies a hot or hung start. Less likely, but possible, is an obstruction in the engine air inlet, a damaged compressor, or if the fuel flow is abnormal, a malfunctioning fuel control.

During takeoff if EGT, rpm, EPR, and fuel flow are all too high, you probably have too high a takeoff thrust setting. If just the EGT and fuel flow are high while the rpm and EPR are normal or low, you may have a damaged turbine or turbine seal. Engine thrust may deteriorate due to deposits of foreign material on compressor blades. This condition, a damaged compressor, or a bleed air valve stuck open will show up on your panel as high EGT and rpm and low fuel flow. The EPR and fuel flow will be low.

When airborne, if all your indications are too high for a given throttle setting, you probably have a malfunctioning fuel control. Follow the procedure in your Dash One.

A high EGT in icing conditions, especially if accompanied by compressor stalls, is a reasonably certain indication that ice has already built up at the inlet and is breaking off and passing through the engine. At all other times, high EGT accompanied by compressor stalls is a reasonably sure sign the compressor has ingested a foreign object, such as a bird.

What Can You Do?

You can greatly prolong the life of the engines on your aircraft, and contribute to the safety of yourself and your crew, through proper throttle manipulation. Know and abide by the operating limitations imposed in your Dash One. If you keep in mind the relationship between the various factors which affect EGT you will be better prepared to take corrective actions.

It is sheer folly to treat overtemps lightly. Just because the turbine does not melt away, there is no reason to assume an engine cannot be, or has not been, damaged. Several momentarily high overtemps are as tough on an engine as a single prolonged high EGT of lesser degree.

To conserve the life of turbine blades and other engine parts:

- Set thrust carefully. Do not exceed the correct engine pressure ratio for the desired thrust setting.
- Monitor EGT closely. When circumstances permit, operate the engine conservatively. Avoid abrupt throttle movements. Fast engine acceleration produces a surge of high EGT.
- Reduce the throttle setting, if necessary, to maintain EGT within limits. Whenever limits are exceeded, report the peak EGT along with the length of time the temperature was above limits in Form 781.
- When EGT cannot be controlled, either shut down the engine or land as soon as possible, using the minimum thrust required to maintain flight.

Operating your engines within the specified limits of time, EGT, rpm, and EPR, should become an instinctive technique — whether you fly turbojet, turbofan, or turboprop aircraft. Remember, it pays to watch those gages!

For as long as you can remember--and even longer--you've been facing choices. As a didie-clad tot, your options were limited: play with Momma's pots or color on the walls?

The Challenge

As you grew older the alternatives facing you grew more complex, but the element of choice was always there. Should you watch TV or study for that exam? Take Betty or Barbara to the prom? Work or loaf during the summer? Join the Navy or the Air Force? Ask for fighters or transports? Go regular or stay in the reserves?

Those agonizing decisions are all behind you, but every day brings a quota of new ones. Have you ever given much thought to these decisions and how they are made? Do you have a guiding philosophy of life which helps you to make them, or do you just "play 'em all by ear?"

What we are talking about are the decisions you make in your official capacity as a MAC aircrew member. Those decisions are not just a matter of personal conscience, they are the key ingredients in the vastly complex and important business of MAC and the U.S. Air Force. Collectively, they determine whether or not we accomplish our global missions and how well or how badly we serve the nation's taxpayers.

Let's get down to specifics. You're a loadmaster and you've just checked your load of cargo for Bangkok. The weights on the pallets do not match the weights on the manifest. They're close, but not exact. Even using the higher figures, you don't figure to be in any trouble, gross-weight or CG-wise. No one else knows about the situation. If you ask for a check by traffic, you're liable to incur a delay which will eat into your crew duty time. What do you do? It's your choice.

* * *

You're a copilot with a thousand hours in the aircraft while your AC this trip has barely three

# of Choice

hundred. Of course, he has a lot more total time, but that doesn't mean anything, does it? You're just slightly resentful at having to jerk the gear for him, especially when you notice him making a number of small errors as the mission progresses. You're sorely tempted to let him hang himself as you sit back and watch. Of course, there's that little nagging thought in the back of your mind that he could do something that would kill you all, but the odds are heavily against it, right? Your choice.

* * *

You're a panel engineer and you've just departed Outer Moonback, a mud hole in the farthest corner of the most desolate country on earth. You spent three weeks there waiting for an engine change crew and parts to make you well again and, man, were you glad to leave! Wearing those dirty dirties for the last eight days was hardly conducive to high morale, although everyone else was in the same boat. Now you're at leveloff and you notice that things are not good with the new engine. The fuel flow is just a tad high, the EGT ditto, and the rpm is not exactly as steady as you'd like it. Probably nothing, you say. If I tell the AC he'll sure as hell turn right around and go back to that pesthole you just left! If I play with it I can keep it running until we're closer to Plush AFB, a warm shower, and a cold beer. Worth a try? Your choice.

* * *

You're the aircraft commander, all right, but your single bars are silver and shiny and the oak leaves on the ACP controller are gold and tarnished with age. He says you should strap your air machine to your warm fanny and get airborne like a good little boy. The weatherman says there is a warning area across your route of flight which could have up to 45 percent severe thunderstorms with hail and lightning and all that other bad stuff. The maintenance man says he can't fix your radar 'cause baby they ain't no parts in stock hereabouts. Your wife says you'd better be home by Saturday 'cause that's her birthday and you promised to take her out to dinner and that play she's been dying to see. Your crew says let's hit the road, boss. We've been gone too long already. Your choice.

* * *

Perhaps the answers in most of these not so fictional cases are fairly easy. But some of them are not, as you well know. The question, as we said before, is how do you go about making these choices? Shakespeare said, "To thine ownself be true . . ." and we agree. You have to build a personal philosophy that's right for you. But there are many elements of a personal philosophy that ought to be shared by all. The most important of these is integrity, defined as a "wholeness," an "unbroken condition." It means you are honest, forthright, and dependable. You don't make a decision or choice one way today and a completely different way tomorrow. You put first things first, even if it means slipping personal desires.

If you're lucky, you've known one or more people with this quality and we're willing to bet that each one made a definite impression on you. Maybe one was your father. Wasn't it a comfortable thing to know that no matter what happened he would react according to a pattern? After all if you can't depend on your own father, who can you depend on? Or perhaps it was a teacher who made you measure up to a standard instead of giving you a passing grade you knew you didn't deserve. Later, in college, it paid off, didn't it? Or maybe it was a church or youth leader. Or an instructor in basic training.

How is your integrity? Is it made of oak, stiff and unyielding, or bamboo? The choice is yours. The answer is more than just life or death, it's what kind of life or death.

Overload a man with a routine boring job, show him no concern
---then sit back and wait for complacency to take over.

C.R. TERROR

"Oh, boy, another square-filler," groaned the Rajah of the Reciprocators, alias chief IP of mission support branch. "Mission support flying just thrills me to death. Okay, Mickey, who've I got today?"

The lieutenant paused in his labors of transcribing the neatly typed flying schedule into grease pencil hieroglyphics on the board and answered by pointing to a captain approaching the board.

"Hello Major Terror," he chirped. "I'm Captain Xavier Chopperjock, your student for today. I was afraid you weren't going to make it. Sure is a hot one, isn't it?"

"Umph," acknowledged C. R., the strain of the night before stamped on his breath. "So what lesson you on?"

"Sir, this is my second ride. I've been scheduled four times for it but we haven't been able to get an airplane to do our thing."

"Yeah, yeah," grumbled C. R. as he rummaged through his brief case for a DD Form 175. "We've all got problems."

"Since taking over as chief of the Convair section, things have really gone to pot. Half the IPs have rotated this summer, so it's fly, fly, fly, around this same old traffic pattern everyday," the Rotund One complained.

"Sounds like a drag; isn't anyone programmed in to help?" asked the student.

"Nope, not that I know about, and nobody seems to care," muttered C. R. "I don't think the head shed even knows we exist."

"Here's the 175," C. R. said as he handed the form to Chopperjock. "Put your name on it and drop it off at base ops. I'll meet you at the snack bar — haven't had anything to eat yet today. We'll brief at the airplane and be on our way."

"Yes, sir," answered the fixed-wing fledgling.

* * *

At the snack bar, the Ace of Aerospace was wondering about tomorrow's schedule and he didn't even notice Bonnie Blousebender when she strutted by, spilling soup all along the sand-

wich line. But, one big bowl of chili and three greasy hamburgers later, he was back to his old self again. And as Captain Chopperjock strolled through the door, C. R. bounced up, slapped his student on the back announcing, "Let's go slip those surly bonds, me lad."

* * *

Out at their trusty T-29, C. R. directed Chopperjock to go ahead and get strapped in.

"I'll check the forms and get the copilot's console set while you're getting ready to go."

"Okay," answered the rotor retread, "but aren't we going to take a look around this buggy before we attach it to us?"

"Naw, don't worry about the wings fallin' off of this old machine; they're welded on. You've been flying them flinging winged contraptions too long. Let's get going so we can be back for happy hour."

* * *

An hour and a half later the two R-2800s roared as Capt Chopperjock jammed the throttles to max power for the eighth touch and go. Sweat streamed down his face even though the cabin was filled with clouds of foggy condensation from the air conditioner.

"Make this a no flapper," shouted C. R. as his student rolled the lumbering old Convair level on downwind. "One more touch and go, then we'll make a full stop."

"Roger," responded the student, "What are the speeds for zero flaps?"

"Hundred nineteen, thirteen, and thirteen," replied the engineer.

As Captain X. Chopperjock turned base leg, he called, "Landing gear -- down, before landing checklist."

All was well until the engineer called, "Landing gear — oh, no!"

There was a long silence while C. R.'s eyes glued themselves to the nose gear indicator. The mains showed wheels down and locked, but the nose gear indicator held fast at the barber pole.

"I've got the bird," C. R. announced as he took the controls and began his diagnosis of the problem. "We have plenty of hydraulic pressure and the gear has been working okay so it looks like a bad indicator.

"I had a similar problem a couple of weeks ago with this same airplane and the command post held us up here for 55 minutes while they got the whole world involved. Just turned out to be a hung-up indicator, so let's save all the muss, fuss, and red lights, and get this baby on the ground."

"Giv'me flaps and hi-lights so I can slow this old crate down," bellowed the Bald Baron.

A look of concern appeared on Chopperjock's face. Sure doesn't sound like the right thing to do, he thought, but the IP must know what he is doing.

C. R. wired the glide path, then eased back on the yoke and greased the landing. He held the nose off as long as possible and then let it down gently. The tire squeaked as it touched and the bird leveled and held. The whole crew breathed a sigh of relief. A premature sigh of relief — as the nose gear gave away and all hell broke loose.

When the dust finally cleared, C. R. opened the main entrance door and stepped out almost level with the ground and eye-to-eye with the wing commander.

"Major Terror, who did it?" roared the colonel. "If it was you, you're grounded!"

"But sirrr . . ." stammered C. R., "who will run the base support shop? They can't get along without me."

"Terror, don't you worry about that. I'll see to it that they get taken care of — and it will be better care than you've provided — you are relieved from duty as of now."

"Yes, sir," responded C. R. and as he turned to walk away he muttered under his breath, "It's a shame it took an accident to get his attention. Oh, well, I'm out of mission support."

Stratoskidder

Rubber skis, speed, and a half inch of water? That's all it takes, as a '135 pilot from another command found out the hard way. What started out to be a normal approach and landing to a wet runway ended in a long slide off the other end.

The crew had computed approach and touchdown speeds for their gross weight of 181,000 pounds, and had planned for a wet runway landing. The approach and touchdown speeds were good, and they landed a reasonable distance down the runway. But the big bird still hydroplaned smack dab into soft ground at the far end of the runway.

We know hydroplaning is a problem. A lot of research is being done to combat it. Right now, the only thing we can say is make sure you are very familiar with your Dash One procedures for landing on a wet runway. Know your aircraft's hydroplaning speeds and plan ahead. If it still looks bad — divert.

Death Ear

This is the true story about an incident on a C-5.

"We were on item 60 of the preflight check list when the panel engineer asked if the controls were clear. I told him to stand by while I checked them. I went to the right side to see if a maintenance stand I had noticed earlier would be clear of the flaps and it was. As I reported all clear to the flight deck, I saw an arm reach down and pick up a maintenance TO out of the flap well. I called the flight deck and told the engineer not to move anything until I could investigate. I found an electrician far back in the flap well working on the number four main sump low light. He was wearing fatigues and blended in perfectly with the darkness of the well. If I hadn't seen him reach out, he would have been crushed to death by the retracting flap.

"No one had informed us that anyone was working on the airplane; no one had put danger tags on the flap handle, the ATMs, and the PTUs of the hydraulic system."

The electrician and the QSS were both at fault for not following published directives concerning maintenance on the C-5.

What do we have to do to get people to listen — and to protect their own lives? Anybody got a suggestion?

Wrong Altitude!

The pilot's clearance from Vancouver Center — through Victoria Tower — read, "cleared to the Portland Airport via V440 Lofall V287 Portland to maintain 7,000 feet. Cross Discovery at 6,000 feet or above: contact Vancouver Center 132.4." The takeoff and climbout were normal with the pilot calling Center to report level at 7,000 feet. Approaching Discovery he was told to change to Seattle Center. The Seattle Center controller gave him a heading of 150 degrees for a radar vector to Portland. Approximately five minutes later, the pilot was switched to another Seattle Center frequency.

Flying a heading of 150 degrees on top, it soon became apparent to the pilot that unless he altered course, the vector from Center was going to take him straight into a mountain. It was not until after he had turned, that the controller called and asked him to confirm his altitude as 12,000 feet. When he replied that he was at "seven," he was immediately cleared to 10,000 and given an explanation that he had been turned over to them at "twelve."

The subsequent investigation, while failing to pinpoint the exact reason for the breakdown in communications, spelled out clearly the need for pilots to ensure that they analyze clearances carefully, and for controllers to ensure that when coordinating the transfer of control between agencies, all required data, particularly altitudes, be given correctly and then read back. Clearly, this close call showed that neither pilots and their equipment nor controllers and their equipment are infallible. Continual monitoring of terrain clearance is essential whenever a pilot is forced to deviate from his planned route of flight. In addition, the incident demonstrated that by using nonstandard radio transmissions, pilots leave themselves wide open to misunderstandings—in this case, the pilot departed from standard procedures when he failed to report his altitude on initial contact with the two Seattle Sectors.

— Flight Comment

Here's a Gripper

A short while back a pilot landed his C-9 at a Marine base and everyone on board received a wild ride. On touchdown the pilot in the jump seat noticed an individual on the runway approximately 2,000 feet from the aircraft. The pilot used max reverse and braking and steered for the side of the 150-foot runway. As the aircraft passed the pedestrian, the cockpit crew observed him diving away from the wingtip. They estimated that they missed him by about two feet.

The hazard report that followed bore there remarks from the airfield manager: "The individual was a snow plow operator working along side of the runway; he was crossing the runway on 'call of nature' at the time of the incident."

We suspect that he accomplished just that when he saw the C-9 bearing down on him.

This incident reemphasizes the need to keep our heads out of the cockpit.

— 375 AAWg/SE

All Hail and Lightning

It's that time of year again, and so far we've read three incidents where "center didn't paint anything on their radar nor the crew on theirs either." But — lightning or hail zapped the birds in all three cases. The pilots had all taken reasonable precautions to detect any T-storms.

If there is a moral to this story it must go like this: There are those who have been there and there are those who will. Try to postpone it as long as possible.

New Bomb Wing Joins MAC

A crew from a famous airlift wing was taking off in a four engine jet on a functional check flight. Immediately after lift-off, five — that's five — panels fell off the right wing. The pilot terminated the flight and made an uneventful landing.

Investigators tabbed maintenance men with the error. The panels had been removed during isochronal inspection and were reattached with only one or two screws. The reason this wasn't caught on inspection — are you ready for this one? — was the inspection work card for the panels had been lost from the package of work cards.

The man in charge of assuring that all the work cards were in the deck had slipped up. And the guy who originally replaced the panels did not fasten them properly. Then the crew chief, during the preflight inspection, did not physically check the top of the wing.

In the future all panel removals at this wing will be entered as a red X in the 781.

What does your unit do to ensure panels are reinstalled properly?

When the Doc Says "Oops!"

How would you like it if you went to the hospital and had a gall bladder operation, and while the doctor was operating he decided to take out your appendix? No big deal — he did what needed to be done. But, let's say the doc did not enter the second removal in your records or tell you about it. Then, a while later — different base, and doctor—you have additional problems and the doctor decides your appendix needs to be taken out. Back to the hospital, out comes the knife, and—surprise, surprise — no appendix! The doctor is baffled and mad — you're sore and mad! You say to yourself — something like this could have cost me my life, just because someone was too lazy or forgot to enter it in my forms. You don't think this is very funny, do you?

Well, a pilot from another command had a similar experience, but the surgery was on his aircraft, not him. The aircraft doctor forgot to enter all the pertinent information in the 781, and it almost cost the pilot and his crew their lives. He was pretty sore and very mad. Here's what happened.

Shortly after takeoff, the pilot had to use full left aileron to keep the plane in level flight. After running through all applicable emergency procedures and a controlability check, the pilot managed a safe landing. Seems the aircraft doctors disconnected the aileron rod and did not record it in the forms.

Come on, guys — let's get everything written down and corrected properly!

after deadline . . . .

A BIG GAMBLE -- When a pilot noses his aircraft into an area of known thunderstorms, he's challenging odds that are stacked against him from the start. This was vividly demonstrated in two recent MAC incidents.

The first occurred during a night landing at home station. Reported weather was 4,000 feet overcast, four miles visibility in thunderstorms, heavy rain, and wind gusting to 25 knots. Although advised of a thunderstorm moving rapidly from west to east across the base, the pilot elected to land.

Four other aircraft had landed just minutes before and none of the pilots reported any difficulty.

Everything was under control until the jet transport crossed the threshold. Then it happened. The aircraft touched down on the right side of centerline. Veering further right, it slid off the runway 800 feet from the touchdown point. None of the crew was injured.

In the second incident a four-engine transport was damaged while en route between two overseas bases. During the predeparture weather briefing, the pilot received a weather warning calling for isolated CBs within 200 miles of his departure point. A similar forecast was given for his destination. A few minutes prior to takeoff, a special weather observation noted towering CBs in all quadrants. Lightning overhead, cloud to cloud, and cloud to ground was also reported. It was daylight and the pilot decided to go anyway.

On climbout the aircraft encountered hail. Though the flight was continued, at the next stop the radome had to be replaced and six hours of sheet metal work was necessary.

ARE YOUR LENSES LEGAL? -- Wearing contact lenses may improve your looks but they're not likely to improve your chances for accident-free flying.

Specifically, flying personnel are prohibited from using contact lenses unless the lenses are selected, tested, and prescribed by the USAF School of Aerospace Medicine. That's the ungarbled word from AFR 167-3.

Furthermore, not all types of sunglasses are authorized. The new light-adjusting sunglasses, for example. Some of these do not react quickly enough to rapid light changes. This could alter the light filtration rate and cause vertigo.

So the rule for fliers is: use only those glasses which have been issued or prescribed by the Air Force.

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